

REMARKS

Applicants' attorney thanks Examiner Nguyen for the courtesy of a telephonic interview on September 14, 2004. In the interview, the undersigned discussed with Examiner Nguyen the pending claims, the Office action of August 4, 2004, and the cited art. The undersigned cordially invites the Examiner to call at the number below should any further information be helpful in the prosecution of this case.

Claims 1-12, 14-39, and 41-58 were considered in the Office action dated August 4, 2004. The Office action rejects these claims.

Applicants hereby amend independent claims 1, 25, 27, 28, 54, and 56, as shown in the preceding Listing of Claims, to include the limitation, "thereby simulating a deformation of the object while preserving surface detail". The amendments are supported by the application as originally filed, for example, in paragraphs [0059] to [0061]. No new matter is added thereby. Applicants also cancel claims 57 and 58 without prejudice.

Following entry of this Amendment After Final, claims 1-12, 14-39, and 41-56 will be pending in this application.

Independent Claims 1, 25, 27, 28, 54, and 56 Are Patentable Over Shih

Independent claims 1, 25, 27, 28, 54, and 56 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,552,722 to Shih et al. (Shih).

As discussed in the above-referenced telephonic interview, the invention provides an advantage over Shih in that it allows gross modifications of a virtual object, such as bending and stretching, without significant loss of surface details, while still maintaining a volumetric representation of the virtual object.

As described in paragraph [0061], methods of the invention allow more flexible interactive editing of volumetric models by supporting a wider range of operations, without compromising the strengths of a volumetric representation. This provides the ability to make relatively large, global changes to models even at a stage of model development where high resolution features have been applied to the surface of the model.

For example, the invention permits a model of a head to be modified by puffing out the cheeks without losing facial details, or in a model of an automobile, to add bulge to wheel wells without distorting the remainder of the vehicle. This is accomplished, for example, by converting a subset of a volumetric model to a non-volumetric representation, modifying the non-volumetric representation, and re-rasterizing to instantiate the changes in the volumetric model representation.

The independent claims have been amended to include the limitation, "thereby simulating a deformation of the object while preserving surface detail". Because Shih fails to teach or suggest every element of any of the amended independent claims, Applicants respectfully request that the rejection of claims 1, 25, 27, 28, 54, and 56 based on 35 U.S.C. § 102(e) be reconsidered and withdrawn.

Dependent Claims 2-9, 12, 14-21, 24, 26, 29-36, 41-48, 53, and 55 Are Patentable Over Shih

The above-listed dependent claims stand rejected under 35 U.S.C. § 102(e) as being anticipated by Shih. Each of these claims depends directly or indirectly from one of the amended independent claims 1, 25, 27, 28, 54, and 56, and includes all its limitations.

As discussed above, Shih fails to teach, or even suggest, every element of any of amended claims 1, 25, 27, 28, 54, and 56. Therefore, Shih fails to teach or suggest every element of their dependent claims, and Applicants respectfully request that the rejection of dependent claims 2-9, 12, 14-21, 24, 26, 29-36, 41-48, 53, and 55 under 35 U.S.C. § 102(e) be reconsidered and withdrawn.

Claims 10, 11, 22, 23, 37, 38, and 49-52 Are Patentable Over Shih in view of Tarr

Dependent claims 10, 11, 22, 23, 37, 38, and 49-52 stand rejected under 35 U.S.C. § 103(a) as being obvious over Shih in view of U.S. Patent No. 6,191,796 to Tarr (Tarr). Applicants respectfully traverse these rejections.

There is no suggestion in Tarr to combine its teachings with those of Shih to produce the invention of dependent claims 10, 11, 22, 23, 37, 38, and 49-52 because Tarr does not suggest creating a volumetric representation of a virtual object whose non-volumetric (i.e. surface-based) representation is modified by methods described therein. Likewise, Shih does not suggest modifying a non-volumetric representation of a virtual object to affect a change in a volumetric model of the object.

Because the motivation or suggestion to combine the cited references is not provided within the references themselves, nor in knowledge generally available in the art, Applicants respectfully request that rejection of dependent claims 10, 11, 22, 23, 37, 38 and 49-52 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claims 57 and 58 are Cancelled Without Prejudice, Rendering Their Rejections Moot

Claims 57 and 58 are cancelled without prejudice, rendering their rejections moot. Applicants explicitly reserve the right to pursue claims 57 and 58 in one or more continuation and/or divisional applications.

Appl. No. 10/017,148
Amendment and Response dated September 17, 2004
Reply to Office action of August 4, 2004

Conclusion

Applicants request that the Examiner reconsider the Application and claims in light of the foregoing Amendment After Final. Applicants respectfully submit that in view of the amendments and remarks herein, all of claims 1-12, 14-39, and 41-56 are in condition for allowance.

If the Examiner believes that it would be helpful to discuss any aspect of the Application by telephone, the undersigned representative cordially invites the Examiner to call at the telephone number given below.

Respectfully submitted,



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